SFP 2002: REEF FISH COMMUNITY DYNAMICS AND LINKAGES WITH FLORIDA BAY

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Coral reefs and reef fish communities are the ultimate downstream performance indicators of the Everglades Restoration (ER). This proposal will provide critical data for assessing and modeling ER effects on coral reef fishes. Reef fishes represent higher trophic levels and are the ultimate downstream integrators of habitat and functional changes in the south Florida coastal marine ecosystem. Since many exploited reef fish species directly use Florida Bay as settlement and nursery habitat, any changes in Florida Bay will result in changes in recruitment, growth, and mortality that will affect reef fish species composition and population abundance, size, and distribution. Our research has developed a state-of-the-art sampling strategy and established a baseline to assess changes in the Florid Keys ecosystem. This research will continue to quantify coral reef fish community changes to achieve the following goals:

1. Provide an intensive and precise spatial and habitat specific fishery-independent visual census assessment of the reef fish communities across the range of reef fish habitats in the Florida Keys in 2002 and 2003 following the implementation of no-take zones.
2. Document trends in reef fish size and abundance within and outside no-take zones in the Florida Keys to assess and quantify on a spatially explicit basis the impacts of fishing and other extractive human activities.
3. Test specific hypotheses predicting continuing changes in reef fish communities as the result of no-take protection.
4. Provide a precise and spatially explicit database for assessing any future reef fish population changes resulting from Everglades restoration.
5. Provide managers options for optimizing long-term survey design strategies to identify reef fish population changes that are precise and cost-effective.
6. Correlate the linkages between reef fish communities and fishing, habitat, oceanographic and other physical processes to guide appropriate experimental studies on dynamic mechanisms and to develop predictive models.

Research will evaluate changes and experimentally test specific hypotheses concerning no-take zone protection for the Florida Keys National Marine Sanctuary (FKNMS) management plan. Ongoing research has shown rapid changes in FKNMS no-take zones as the result of eliminating fishing in 1997. Elucidating the impacts of fishing is essential because fishing can potentially confound, dominate, or synergistically interact with other environmental influences. This collaborative effort is focused on CIMAS Themes 2 and 3 and is consistent with NOAA science and environmental stewardship objectives. The continued quantification of spatially explicit changes in reef fish communities is critical for this effort. The data collected will be essential for assessing any future community effects resulting from changes in Florida Bay as the result of Everglades restoration efforts.